Early Journal Content on JSTOR, Free to Anyone in the World

This article is one of nearly 500,000 scholarly works digitized and made freely available to everyone in the world by JSTOR.

Known as the Early Journal Content, this set of works include research articles, news, letters, and other writings published in more than 200 of the oldest leading academic journals. The works date from the mid-seventeenth to the early twentieth centuries.

We encourage people to read and share the Early Journal Content openly and to tell others that this resource exists. People may post this content online or redistribute in any way for non-commercial purposes.

Read more about Early Journal Content at http://about.jstor.org/participate-jstor/individuals/early-journal-content.

JSTOR is a digital library of academic journals, books, and primary source objects. JSTOR helps people discover, use, and build upon a wide range of content through a powerful research and teaching platform, and preserves this content for future generations. JSTOR is part of ITHAKA, a not-for-profit organization that also includes Ithaka S+R and Portico. For more information about JSTOR, please contact support@jstor.org.

GEOLOGY AND PALÆONTOLOGY.

A SECOND GENUS OF EOCENE PLAGIAULACIDÆ. — Although many of the Mammalia of the Lower Eocene formation resemble the *Marsupialia*, characters which are unquestionably those of that order, have not yet been observed. They appear in many instances to possess characteristics of the insectivorous and carnivorous orders as well, so that it has been thought best to refer them to a single order in combination with the *Insectivora*, the *Bunotheria*. Some new species, however, present the marsupial facies so decidedly as to leave no alternative but to refer them to that order, until further evidence shall confirm or set aside such a conclusion.

The new genus now to be treated of is not very nearly related to any existing form of marsupials The nearest ally, *Plagiaulax*, is a genus of the Jurassic age, which has been referred by Professor Marsh to a distinct order, under the name of the *Allotheria*. As Professor Marsh does not offer any characters by which this group can be distinguished as an order from either the *Marsupialia* or the *Bunotheria*, I have not been able to adopt it. As Falconer has suggested, the nearest ally is perhaps *Hypsiprymnus* among the existing Marsupials, and *Thylacoleo* has, perhaps, an equal affinity. As the only part of the structure of these genera which is well known is the dentition, I define them as follows :

The family of the *Plagiaulacidæ* differs from that of the *Macropodidæ* in the possession of but two inferior true molars. Most of the genera have the fourth premolar trenchant, and generally those anterior to it also, while there is but one, if any—the third—in the *Macropidæ*. There may, however, be but one in *Catopsalis*. The genera differ as follows:

a. One large premolar, which presents anteriorly.
    Fourth premolar with a cutting edge anteriorly, and a free posterior cusp; molars with numerous cusps .... *Catopsalis*.
aa. Several large premolars which present upwards.
    Premolars four, not ridged.................................... *Ctenacodon*.
    Premolars with lateral ridges extending to the posterior edge of the crown... *Plagiaulax*.
    Premolars with lateral ridges not extending to the posterior edge of the crown .... *Ptilodus*.

Of the above genera, *Plagiaulax* is represented by two species in the English Jurassic; *Ctenacodon* by two species in the North American Jurassic; *Ptilodus* probably by two species from the Lower Eocene, one from France according to Lemoine, and one from North America; and *Catopsalis* by one species from the Lower Eocene of North America, which I now describe.

Catopsalis foliatus, gen. et sp. nov.

Char. Specif.—The mandibular ramus which represents this animal, is robust and deep. The alveolar line rises from behind forwards, as in *Elephantidæ* and various rodents, and then suddenly descends. The inner side of the ramus is concave, while the external side, anterior to the masseteric fossa is convex. The incisive alveolus is thus thrown inside the line of the molars in front. There is a large fossa exposed by weathering, below and behind the last molar, which is identical with that seen in *Hypsiprymnus* and *Macropus*, and indicates a large dental foramen. Below the middle of the fourth premolar tooth, the incisor tooth is quite large, suggesting whether it had not a persistent growth, as in the rodentia.

The posterior cusp of the fourth premolar is triangular in profile, the anterior edge descending steeply. It is uncertain whether the edge of the crown rises again, forming another lobe. The apex of the cusp is conic. The first true molar is of large size and remarkable form. The crown viewed from above is a long oval. It has a deep median longitudinal groove, which sends out branch grooves alternately, and at right angles to the edge. The spaces between the grooves form block-shaped tubercles, four on the inner and five on the outer sides, whose transverse diameter generally exceeds their anteroposterior. The median groove is open at its anterior extremity; the posterior is closed by an elevated convex margin. The apices of the lobes are obtuse where not distinctly worn. The last (second) true molar is much shorter, and a little wider than the first, and has the same character of surface. There are two large tubercles on the inner side, and four smaller on the external side. The posterior end of the crown is narrower than the anterior. The anterior base of the coronoid process is opposite the posterior extremity of the first true molar tooth. The jaw with its dentition, in its present condition, has a curious resemblance to that of a tubercular-toothed *Mastodon*, with the order of size of the molars reversed. Length of base of fourth premolar .0108. Vertical diameter of root of incisor .0070. Diameters M. I; anteroposterior .0107, transverse .0050; diameters M. II; anteroposterior, .0060, transverse .0060; depth of ramus at front of P-m. IV, .0120; depth of ramus at front of M. I, .0190; depth of ramus at posterior edge of M. II, .0150.

Found by D. Baldwin in the Puerco bed of Northwestern New Mexico.—*E. D. Cope.*

TWO NEW GENERA OF THE PUERCO EOCENE.—*Haploconus lineatus*, gen. et sp. nov.—*Char. gen.* The same as *Anisonchus*, excepting that the crown of the third superior premolar is a simple cone, wanting the large crescentic crest of the inner side seen in that genus and *Catathlæus*. It is more nearly allied to the two genera named than to *Phenacodus*. *Char. specif.* These are derived from a number of specimens, the species having been abundant in New Mexico in the earliest epoch of the Tertiary. It is about the size of the *Anisonchus sectorius*, and differs from it in several details besides in the generic characters. In the *H. lineatus* the base of the posterior inner tubercle of the superior molars is more distinct, and projects further inwards. The fourth premolar is relatively larger, and the enamel is delicately plicate, remotely approaching the condition of the surface seen in *Catathlæus rhabdodon.* In the inferior molars, the anterior marginal tubercle is wanting. The first premolar has but one root; the second and third have a posterior but no anterior basal lobe. The canines of both jaws are rather large, are acute, and flat on the inner side, and vertical in direction. Length of superior molar series M. .032; of premolars, .021; diameters P-m. IV; anteroposterior, .005; transverse, .006; of last true molar, anteroposterior, .004; transverse, .0065. Depth of ramus mandibuli at M. I, .0127.

A second species of this genus is probably the *H. angustus*, from the same horizon, which I described as a *Mioclænus.*

Pantolambda bathmodon, gen. et sp. nov. Founded on a mandibular ramus which supports the first true molar and the last two premolars. The characters of these teeth remarkably resemble those of *Coryphodon. Char. gen.* Crowns of molars supporting two Vs, of which the posterior wears lower than the anterior. Premolars III and IV, crowns consisting of one V and a short median longitudinal crest, as in *Coryphodon*; II and I, unknown. The character which indicates that the genus is distinct from *Coryphodon* is the elevation of the anterior branch of the anterior V of the true molar, which is more elevated than the posterior branch. In Coryphodon it is much less elevated. The type species is smaller than any known Coryphodontid. *Char. specif.* The bases of the P-m. III and IV are subquadrate, the inner side rounded, that of the IV relatively the wider. On the III the median keel constitutes the heel; on the IV, the keel is in the center of a wide heel. No cingula. The first true molar has an anterior cingulum, but no external one. The enamel is wrinkled where not worn. Diameters of P-m. III, anteroposterior, .009; transverse, .007; of P-m. IV; anteroposterior, .009; transverse, .0085. Width of first true molar in front, .0083. Apparently about the size of a sheep.

It will be for additional material to demonstrate whether this genus belongs to the *Amblypoda* or *Perissodactyla.* It was discovered with the preceding species by Mr. D. Baldwin in the Puerco formation of N. W. New Mexico.—*E. D. Cope.*

"MUD LUMPS" AND MOUNDS NEAR NEW ORLEANS.—While attached to a Coast Survey party working on the Mississippi river, I was informed that there were three "Indian mounds" back in the edge of the swamp; on examination they proved to be "mud lumps," but of a shape and material different from those at the mouth of the river. I have looked over various works on geology, but can find no notice of any of these elevations so far above the river mouth, and no very satisfactory explanation of the manner in which they are formed or of the forces forming them. The mounds above spoken of are on the left bank of the river, on the place of Mr. Louis Le Bourgeois, fifty-five miles above New Orleans, they are about one and a-half miles back from the river and just in the edge of the swamp. The largest one is 40 feet in height and 144 feet in diameter, conical in shape with no signs of a crater. 300 yards N. × E. from it is a smaller one, 15 feet in height and 80 feet in diameter. 250 yards E. N. E. is another, not more than 5 feet in height and 20 feet in diameter. Formerly the large mound was entirely surrounded by a circle of these small elevations, but they have been leveled during the process of cultivation. The surface soil around the mounds is the usual black alluvium of the valley.

Mr. Ogden, U. S. Navy, and myself cut into the large mound from the top to a depth of 18.5 feet, and found as follows: There were less than two inches of vegetable mold, and the remainder of the excavation was cut through a hard orange sand; it was so hard that the pick had to be used continuously; single valves of shells, apparently Corbula, were abundant as far down as we went; to a depth of ten feet the shells were mostly soft and calcareous, below that they were all silicified; limestone concretions were very abundant, though generally small; six feet below the surface there was a layer or bed of these shells, with the valves separate; this bed was three feet wide and long, and about three inches thick, and immediately underneath it the sand was black; in some case rough concretions were attached to the shells. There were numerous black spots about the size of buck-shot thickly scattered throughout the whole extent of the excavation; under the microscope these black spots proved to be aggregations of sand; we considered them probably the result of the destruction of minute shells. Eight feet below the surface there was a handful of blue clay and sand mixed, and a little below that a handful of fine gray sand. Half way down the side of the mound I found the same material and appearances, and at the beginning of the slope, the orange sand lay thirty inches from the surface; thirteen feet out from the bottom of the mound, it was necessary to cut through forty-seven inches of alluvium to reach the orange sand, and nineteen feet out it could not be found at all.

About 100 yards from the mound there was a deep ditch, in the bottom of which there was indication, in one place, of the orange sand, eight feet below the surface, but I think that it had been brought from a greater depth by crayfish. The large mound is thickly covered with a growth of magnolia, ironwood, cane and a species of wild climbing vine. During the summer season, as we were informed, flowers peculiar to the mound are found. From the regular shape of the large mound, broken only by holes dug by treasure-hunting negroes, it seems probable that the mound-builders may have shaped it to suit their ideas of symmetry. On the right bank of the river, some three miles back, and in the swamp, I was told by the negroes there were two other large mounds similar in appearance to the one described above. I did not have time to see and examine them. Below New Orleans I noticed two small irregular lumps, bearing evidence of a crater on one side, in one, and in the center in the other.

At Southwest Pass there is a mound, or elevated area, called a "salt mound," from the well of salt water in the center. The pilots told me that when these lumps, or areas, are thrown up, there are, at first, salt wells on them; the wells are very deep and boil up, apparently from escaping gas; ultimately the wells fill up and disappear. There are frequent vibrations, and horizontal and vertical movements of the land in the passes. On one of the lumps in Southwest Pass there is a well discharging an inflammable gas.

Professor Thomassy examined the Le Bourgeois mound and pronounced it the result of the damming of a subterranean stream. Professor Lyell thinks that they may be caused either by the binding of the stratum of earth deposited in the bottom of the river by its own weight and motion, down the grade of the stream, or by the vertical pressure of accumulations of gas, or by both.

In one or two works on the antiquities of the mound-builders, there are notices of numerous anomalous mounds, generally of small size, scattered throughout the Mississippi valley. These may be mud lumps similar to the small ones surrounding the Le Bourgeois mound.—*M. H. Simons, P. A. Surgeon, U. S. Navy.*

GEOLOGICAL NEWS.—The *Geological Magazine* for February contains articles upon the occurrence of Spermophilus in Norfolk, England, beneath the boulder-clay or till, by E. T. Newton; and a Supplement to a chapter in the history of Meteorites, by W. Flight. Mr. Flight notices the principal meteorites found between 1875 and 1881.——In the same magazine Mr. H. H. Howorth concludes his argument for the occurrence of a great post-glacial flood. After reviewing the theories of Pére David, Mr. Kingsmill, Baron Richthofen, etc., and pointing out that they fail to explain the occurrence of the loess at considerable elevations, the character of the loess material and the nature and preservation of its fossils, he proceeds to argue that the loess had its origin in vast outbursts of volcanic mud, a great portion of which was swept away and carried to a lower level by a deluge on an immense scale.——At a recent meeting of the Royal Institution of Great Britain, Dr. W. B. Carpenter spoke upon land and sea in relation to geological time. The conclusion supported was that the deep ocean basins date from the most remote antiquity, and that the subsidences and depressions of existing continents have been of comparatively small vertical extent, the elevation of mountain-chains being formed by lateral thrust.——The March number of the *American Journal of Science* contains the second of a series of articles upon the flood of the Connecticut River valley from the melting of the Quaternary glacier, by J. D. Dana. The average depth of this flood, taken from the level of the wide terrace out of which the present river-bed is hollowed, was 140 feet north of the Massachusetts line, and about 125 feet in Massachusetts and Connecticut.——In the same magazine C. D. Walcott describes a new genus of the order Eurypterida, from the Utica slate. As far as known no example of the Eurypterida has previously been described from a lower horizon than the Medina sandstone.——At a recent meeting of the Paris Academy of Sciences, M. Emile Blanchard stated that the condition of the fauna and flora of New Zealand showed it to be a remnant of a southern continent submerged during the modern epoch of the earth's history.

MINERALOGY.[1]

PSEUDO-SYMMETRY.—Much interest has been excited among crystallographers in those curious crystalline forms, which, while appearing to be simple forms belonging to one system of crystallization are now regarded as composed of a number of twinned crystals of another system. These are the crystals which exhibit the "optical anomalies" for which so many explanations have been offered.

Some recent investigations in this direction appear to be overturning our most elementary mineralogical conceptions. Thus, the garnet, for example, so constant in crystalline form, notwithstanding the great variations in composition, has always been considered a type of the isometric system. Yet, by means of delicate optical investigation, the conclusion has been reached that several of the varieties of garnet are not simple dodecahedrons, as indicated externally, but are composed of twelve orthorhombic crystals symmetrically arranged around a central point. It has moreover been stated that in the case of the varieties topazolite and ouvarovite, each of these twelve orthorhombic crystals are themselves composed of four more elementary crystals, making a group of 48 crystals in all to produce each apparently simple form.

Pseudo-symmetrical crystals formed by a less number of twins arranged around a line or plane have long been known. The three crystals often twinned in aragonite, the four in harmotome, the six in witherite and the eight in rutile are familiar examples of twins symmetrically placed around a line. The repeated twinnings in the plagioclase felspars offer an example of numerous twins on a single plane.

---

[1] Edited by Professor HENRY CARVILL LEWIS, Academy of Natural Sciences, Philadelphia, to whom communications, papers for review, etc., should be sent.